Direct Oxidation of Primary Alcohols to Carboxylic Acids

V. Cherepakhin, T. J. Williams

\[
\begin{align*}
RCH_2OH + MO_4^{n-} & \rightarrow RCOOH + MO_x \\
\text{Oxometalate} & \quad \text{Oxidation} \\
RCH_2OH + OH^- & \rightarrow [M] + RCOO^- \\
\text{Transfer} & \quad \text{Dehydrogenation} \\
RCH_2OH + R' & \rightarrow RCH_2OH + 2R' \\
\text{Acceptorless} & \quad \text{Dehydrogenation} \\
RCH_2OH + H_2O & \rightarrow RCOOH + 2H_2 \\
\text{Electrochemical} & \quad \text{Oxidation} \\
\end{align*}
\]
Transition-Metal-Catalyzed Cross-Coupling Reactions of Grignard Reagents

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Shining Light on the Light-Bearing Element: A Brief Review of Photomediated C–H Phosphorylation Reactions

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Direct Oxidation of Primary Alcohols to Carboxylic Acids

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Polycyclic Compounds from Allenes via Palladium-Mediated Intramolecular Carbopalladation/Nucleophilic Substitution Cascade Processes

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**M. R. Petkovic**
**V. M. Savic**
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Gold Catalysis and Furans: A Powerful Match for Synthetic Connections

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Alkylzirconocenes in Organic Synthesis: An Overview

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Photocatalytic Stoichiometric Oxidant-Free Synthesis of Linear Unsaturated Ketones from 1,2-Disubstituted Cyclopropanols

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A. V. Krech
V. N. Zhabinskii
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Michael Addition of Indoles to Enones Catalyzed by a Cationic Iron Salt

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Visible-Light-Driven Z-Selective Reaction of Methyl Ketones with DMSO: A Mild Synthetic Approach to Methylthio-Substituted 1,4-Enedione Promoted by Selectfluor™

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M. L. Deb*
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Facile and Mild Access to Fluorescent Ladder-Type Indolo[3,2-a]carbazoles via Cascade Annulation

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Y. Wu
Z. Ying
F. Luo
E. Chen
W. Chen*
Y. Yu*
Zhejiang University, China

Synthesis of Hydrazinylpyridines via Nucleophilic Aromatic Substitution and Further Transformation to Bicyclo[2.2.2]octenes Fused with Two N-Aminosuccinimide Moieties

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K. Kranjc*
University of Ljubljana, Slovenia
Ruthenium-Catalyzed Oxidative Dearomatization of N-Boc Indoles

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X.-J. Feng
M. Bao*
School of Chemistry and Materials Engineering, P. R. of China
State Key Laboratory of Fine Chemicals, P. R. of China
Dalian University of Technology, P. R. of China

Ruthenium Cl₃₃H₂O (6.0 mol%)
NaIO₄ (1.5 equiv)
MeCN, 70 °C

+ traditional oxidation system
+ high regioselectivity
+ mild conditions
+ 10 examples
+ 46–92% yields

Synthesis of Fused Pyrimido[1,6-α]indolones via Rhodium(III)-Catalyzed Cascade Annulations

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S. Bodasu
K. Mallesh
Y. L. Prapurna
CSIR-Indian Institute of Chemical Technology (CSIR-IICT), India

X₁R₁ + [Cp*RhCl₂]₂ (5 mol%)
CsOAc, acetone
rt, 1–4 h

20 examples
70–82% yield

Highly Functionalized Pyrrolylpyridines from 2-(Acylethynyl)-pyroles

D. N. Tomilin
L. N. Sobenina
I. A. Ushakov
B. A. Trofimov*
A.E. Favorsky Irkutsk Institute of Chemistry, Russia

NH₄Cl, K₂CO₃
DMSO

10 examples

Easily available by transition-metal-free cross-coupling

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Cs₂CO₃-Mediated Regio- and Stereoselective Sulfonylation of 1,1-Dibromo-1-alkenes with Sodium Sulfinates

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P. Salehi
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Alzahra University, Iran

Cs₂CO₃-Mediated Regio- and Stereoselective Sulfonylation of 1,1-Dibromo-1-alkenes with Sodium Sulfinates

(Cs₂CO₃)Ar·Br + R'SO₂Na

Ar = 2-nitrophenyl
R¹ = Ph

Cs₂CO₃ (1 equiv)
DMSO, 100 °C

19 examples
65–91% yield

Sonogashira coupling

R² = Cl, 91%
R² = NO₂, 88%

Direct and Regioselective C(sp³)–H Bond Fluorination of 2-Alkylazaarenes with Selectfluor

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A. Mazzah
M. Penhoat
P. Melnyk
C. Rolando
L. Chausset-Boissarie*
Université de Lille, France

Direct and Regioselective C(sp³)–H Bond Fluorination of 2-Alkylazaarenes with Selectfluor

Selectfluor
base

• Broad substrate scope
• Direct C–F bond formation
• Mild reaction conditions
• Up to 62% yield

Diversity-Oriented Stereocontrolled Synthesis of Some Piperidine- and Azepane-Based Fluorine-Containing β-Amino Acid Derivatives

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M. Haukka
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Diversity-Oriented Stereocontrolled Synthesis of Some Piperidine- and Azepane-Based Fluorine-Containing β-Amino Acid Derivatives

R¹ = H, Bn, Et
R² = Boc, Bz
R³ = alkyl, fluoroalkyl

1. ring cleavage by olefin bond oxidation
2. ring closing by double reductive amination

fluorine-containing, azaheterocyclic β-amino acids
12 examples
diastereochemical diversity
Convergent Synthesis of Immune Inhibitor IMM002

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P. R. of China